

Fig. 1

FIG. 2

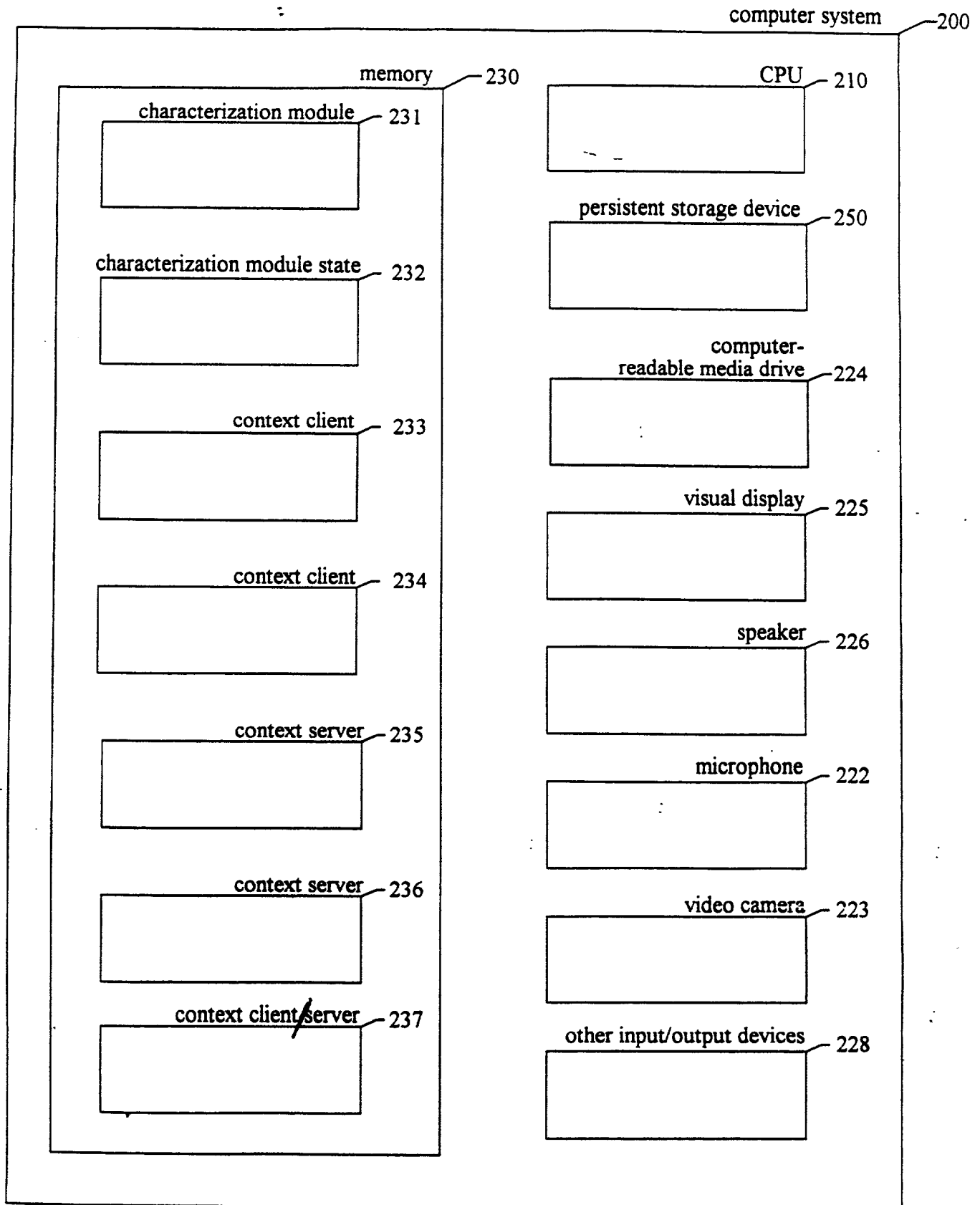


Fig. 2

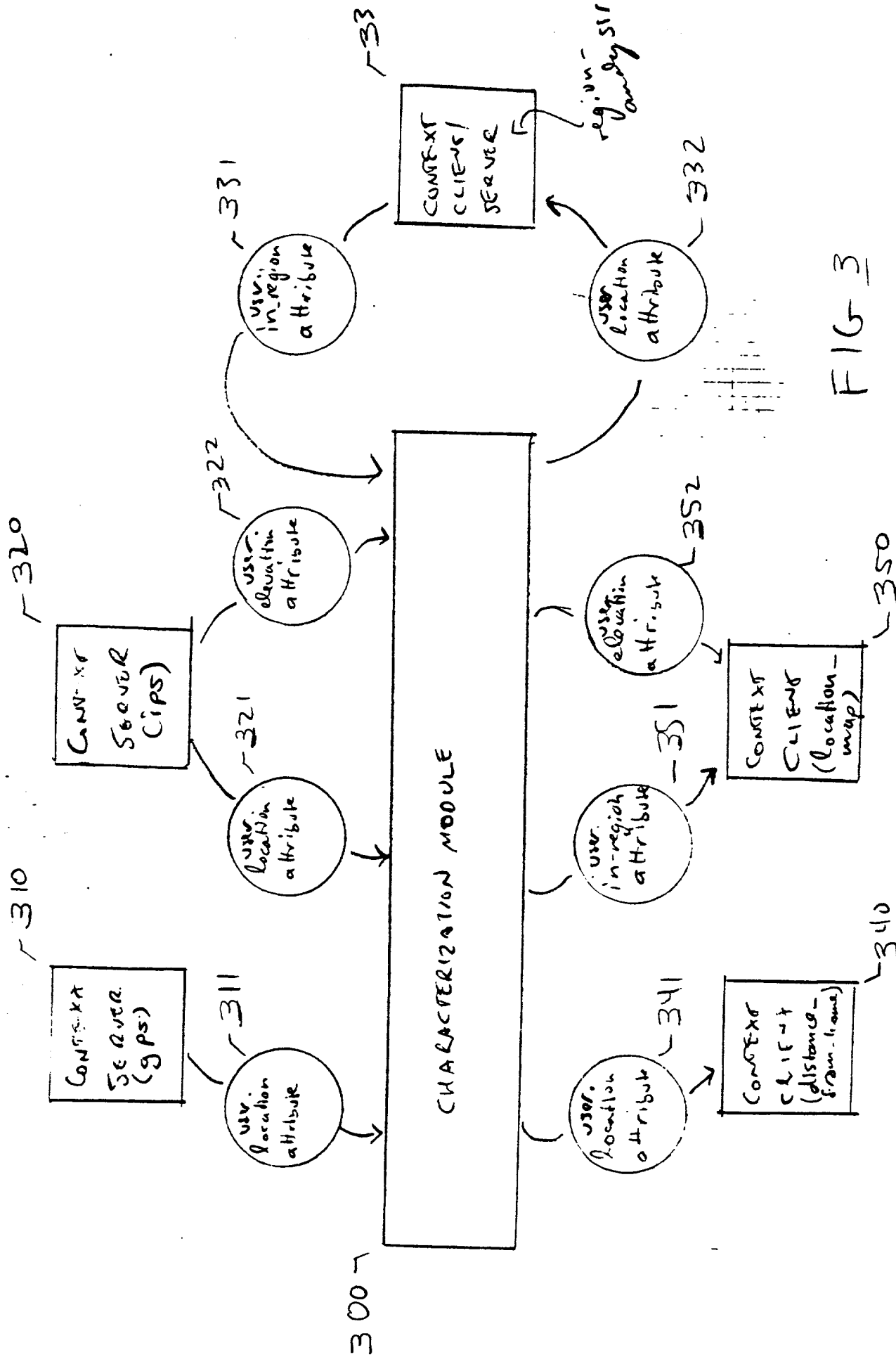


FIG. 3

FIG 4

400

context server table

context server name	version	installation date	filename	request handler
gps	1	2/10/2000	gps.exe	(reference)
ips	1	2/21/2000	ips.exe	(reference)
location_region_analysis	1	2/10/2000	l r a.exe	(reference)

FIG 4

attribute instance table

attribute name	context server name	value	uncertainty	timestamp	units	number of context clients consuming
user.location	gps	47° 38.73' N, 122° 18.43' W	0° 09'	13:11:04.023 2/22/2000	degrees/minutes	2
user.location	ips	47° 38.745' N, 122° 18.424' W	0° 021'	13:11:01.118 2/22/2000	degrees/minutes	2
user.elevation	ips	22	.5	13:11:01.118 2/22/2000	meters	1
user.in_region	location_region_analysis	none	none	none	none	0

600

context client table

context client name		message handler
location_map	(reference)	
distance from home	(reference)	
region_analysis	(reference)	

601
602
603

612

611

FIG 6

700

attribute instance table

attribute name	context server name	value	uncertainty	timestamp	units	number of context clients consuming
user.location	gps	47° 38.73' N, 122° 18.43' W	0° 09'	13:11:04.023 2/22/2000	degrees/minutes	2
user.location	ips	47° 38.745' N, 122° 18.424' W	0° 021'	13:11:01.118 2/22/2000	degrees/minutes	2
user.elevation	ips	22	.5	13:11:01.118 2/22/2000	meters	1
user.in_region	location_region_analysis	none	none	none	none	1

701
702
703
704

711 712 713 714 715 716 717

FIG 7

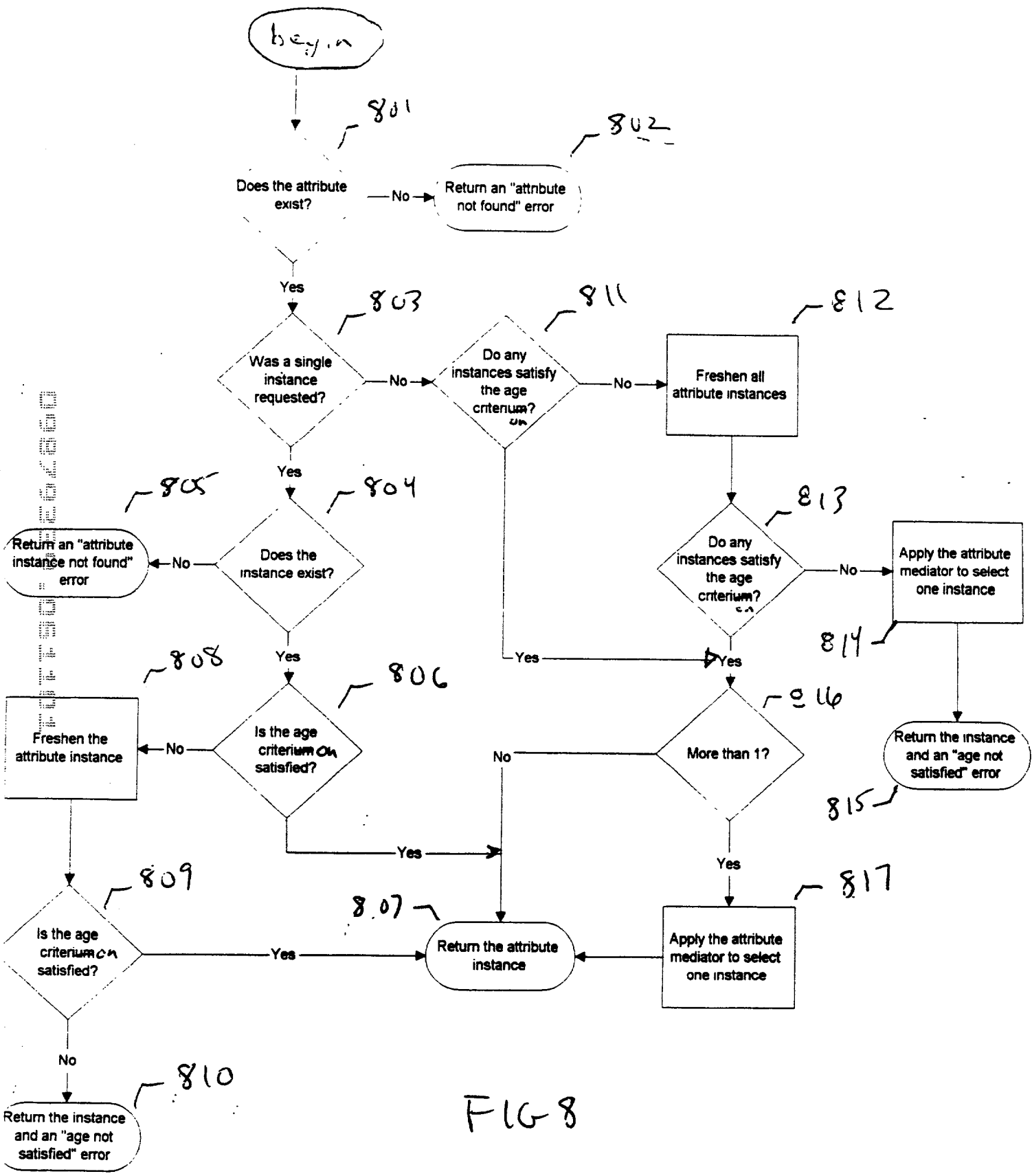


FIG 8

FIG 9

attribute instance table

attribute name	context server name	value	uncertainty	timestamp	units	number of context clients consuming
user.location	gps	47° 38.73' N, 122° 18.43' W	0° 09'	13:11:04.023 2/22/2000	degrees/minutes	2
user.location	ips	47° 38.745' N, 122° 18.424' W	0° 021'	13:11:01.118 2/22/2000	degrees/minutes	2
user.elevation	ips	22.25	.5	13:11:06.565 2/22/2000	meters	1
user.in region	region analysis	none	none	none	none	1

FIG 9

condition table

condition name	context client name	first logical parameter	second logical parameter	comparison value	logical operator
in region true	region analysis	user.in region	none	TRUE	=

FIG 10

FIG. 10

condition monitor table

condition monitor name	context client name	condition name	behavior	frequency	condition last evaluated	trigger handler reference	stopped
region_boundaries_crossed	region_analyses	in_region_true	TRUE or FALSE	30	13:11:29.101 2/22/2000	(reference)	no

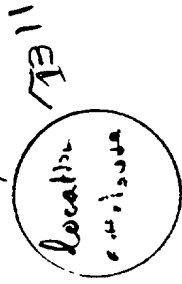
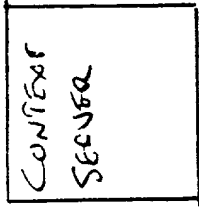
FIG. 11

condition monitor table

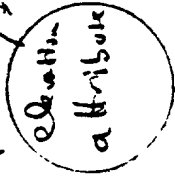
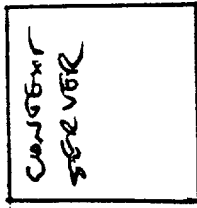
condition monitor name	context client name	condition name	behavior	frequency	condition last evaluated	trigger handler reference	stopped
region_boundaries_crossed	region_analyses	in_region_true	TRUE or FALSE	30	13:11:59.101 2/22/2000	(reference)	yes

FIG. 12

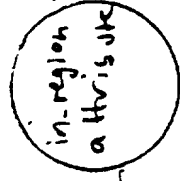
1310



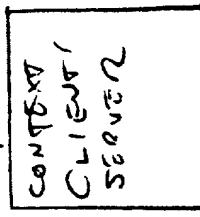
1321



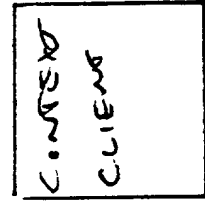
1322



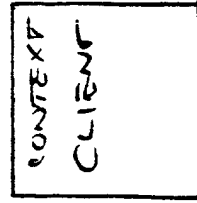
1331



1330

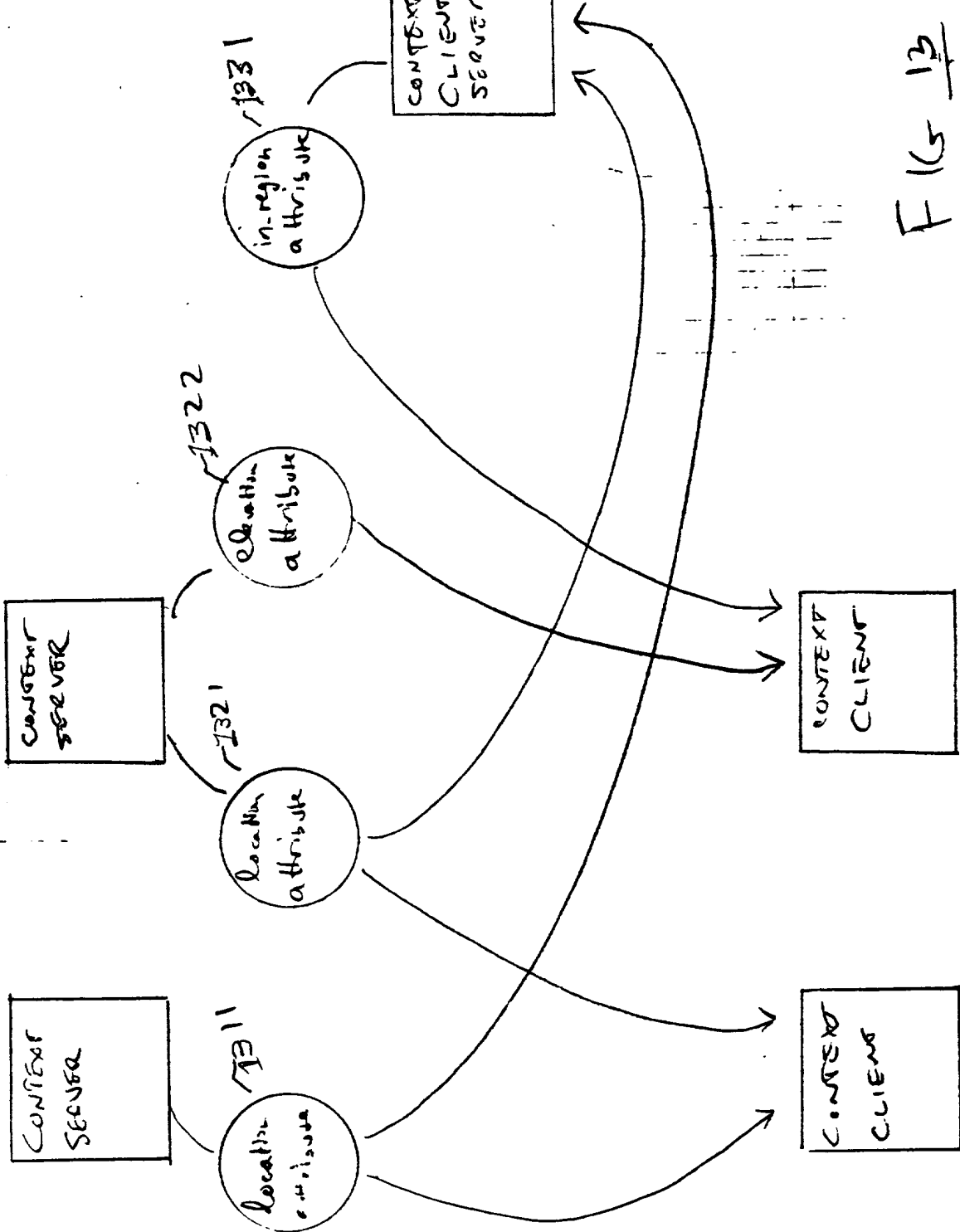


1340



1350

FIG. 13



1401 ~
1402 ~
1403 ~
1404 ~

attribute name	context client name
user.location	distance_from_home
user.in_region	location_map
user.location [gps]	location_region_analysis
user.elevation	location_map

L 1411

2 1412

[illegible]

User.

Desired_privacy_level
 Interruptibility
 Speed
 Direction
 Acceleration
 Availability.
 Cognitive_availability
 Tactile_availability
 Manual_availability
 Visual_availability
 Oral_availability
 Auditory_availability
 Proximity.<Item or place name>
 Mood.
 Happiness
 Sadness
 Anger
 Frustration
 Confusion
 Activity.
 Driving
 Eating
 Running
 Sleeping
 Talking
 Typing
 Walking
 Location.
 Place_name
 Latitude
 Longitude
 Altitude
 Room
 Floor
 Building
 Address
 Street
 City
 County
 State
 Country
 Postal_Code
 Destination. (same as User.Location.)
 Physiology.
 Pulse
 Body_temperature
 Blood_pressure
 Respiration

Person.<name or ID>. (same as User.)

Platform.

UI.

Oral_input_device_availability
 Manual_input_device_availability
 Tactile_output_device_availability
 Visual_output_device_availability
 Auditory_output_device_availability

Platform. (continued)

CPU.

Load
 Speed

Memory.

Total_capacity
 Used

Storage.

Total_capacity
 Used

Connectivity.

Connection_status
 Connection_speed
 Connection_type/device
 Connection_activity

Power.

Power_source
 Power_level

Environment.

People.

Nearest
 Number_present
 Number_close

Local.

Time
 Date
 Temperature
 Pressure
 Wind_speed
 Wind_direction
 Absolute_humidity
 High_forecast_temperature
 Low_forecast_temperature
 People_present
 Ambient_noise_level
 Ambient_light_level
 Days.<previous or future>.
 High_temperature
 Low_temperature
 Precipitation_type
 Precipitation_amount
 Place.<place name>. (same as Environment.Local)

Application.

Mail.

Available
 New_messages_waiting
 Messages_waiting_to_be_sent

Phone.

Available
 In_use
 On/off
 Notification_mechanism
 Call_incoming
 Caller_ID

Sound_recorder.

Available
 Recording

Fig. 15

1) User Setting

a) Mental Context

- i) Meaning
- ii) Cognition
 - (1) Divided User Attention
 - (2) Task Switching
 - (3) Background Awareness
- iii) Solitude
- iv) Privacy
 - (1) Desired Privacy
 - (2) Perceived Privacy
- v) Social Context
- vi) Affect

b) Physical Situation

- i) Body
 - (1) Biometrics
 - (2) Posture
 - (3) Motion
 - (4) Physical Encumberment
 - (a) Senses
 - (i) Eyes
 - (ii) Ears
 - (iii) Tactile
 - (iv) Hands
 - (v) Nose
 - (vi) Tongue
 - (b) Workload demands/effects
 - (c) Interaction with computer devices
 - (d) Interaction with people
 - (e) Physical Health
- ii) Environment
 - (1) Time/Space
 - (2) Objects
 - (3) Persons
 - (a) Audience/Privacy Availability
 - (i) Scope of Disclosure
 - (ii) Hardware affinity for privacy
 - (iii) Privacy Indicator for User
 - (iv) Privacy Indicator for Public
 - (v) Watching Indicator
 - (vi) Being Observed Indicator
- (4) Ambient Interference
 - (a) Visual
 - (b) Audio
 - (c) Tactile

2) Computer

a) Power

b) Configuration

- i) User Input Systems
 - (1) Hand/Haptic
 - (a) Keyboard/Keystrokes
 - (2) Voice/Audio
 - (3) Eye Tracking
 - (4) Cursors
 - (a) Axis
 - (b) Resolution
 - (i) Selection
 - (ii) Invocation
 - (c) Accelerators
 - ii) Output Systems
 - (1) Visual
 - (a) Resolution
 - (2) Audio
 - (a) Public/Private
 - (3) Haptic
 - iii) External Resources
 - (1) I/O devices
 - (2) Connectivity
- c) Data
- i) Quantity/State
 - ii) Urgency/Importance
 - (1) Use of Prominence
 - iii) Modality
 - iv) Sensitivity/Purpose
 - (1) Privacy Issues
 - (2) Use of Association
 - (3) Use of Safety
 - v) Source/Ownership
 - (1) Types
 - (a) User generated
 - (b) Other computers or people
 - (c) Sensor
 - (d) PC State
 - (2) Use of Association

Fig. 16

Fig. 17

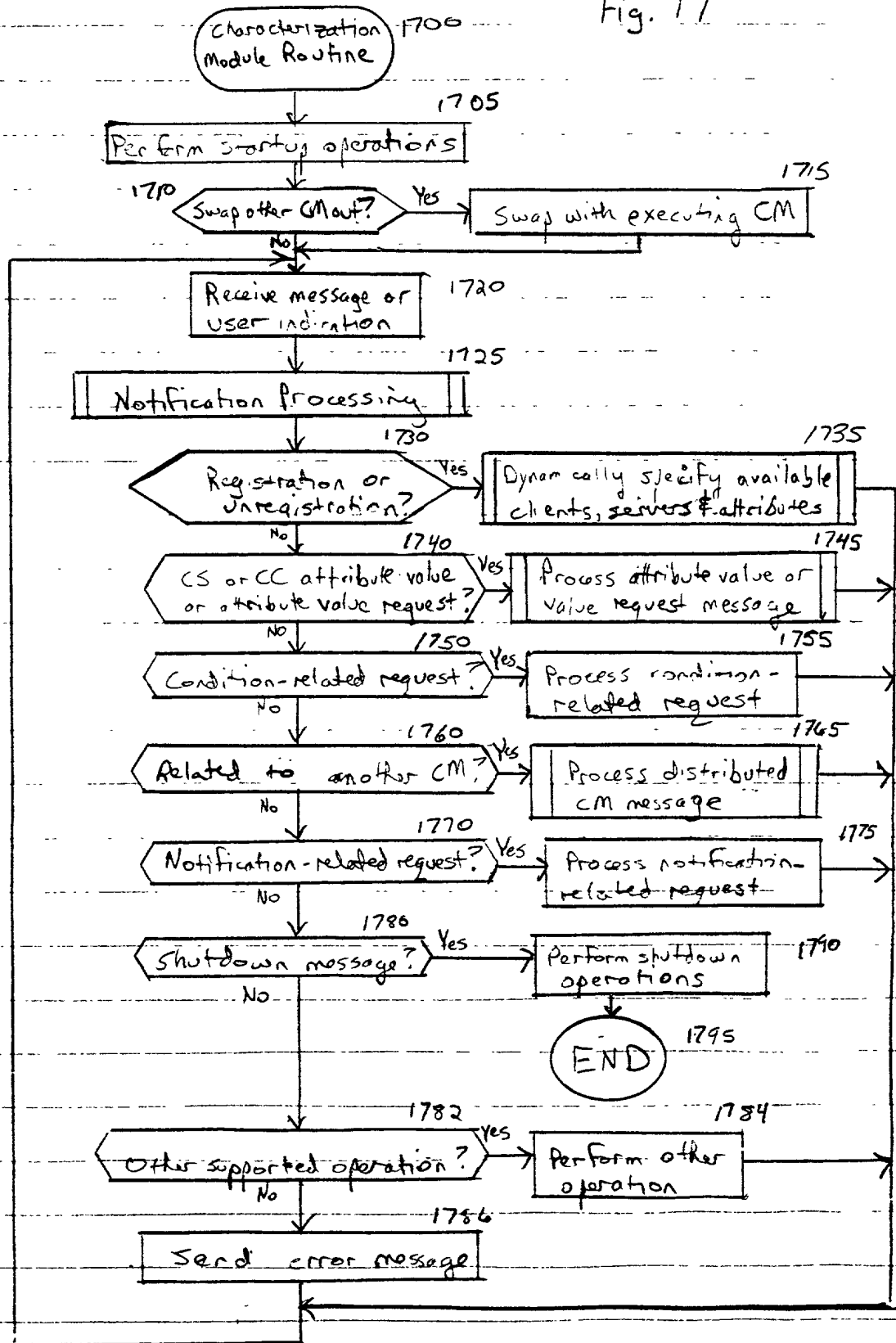


Fig. 18

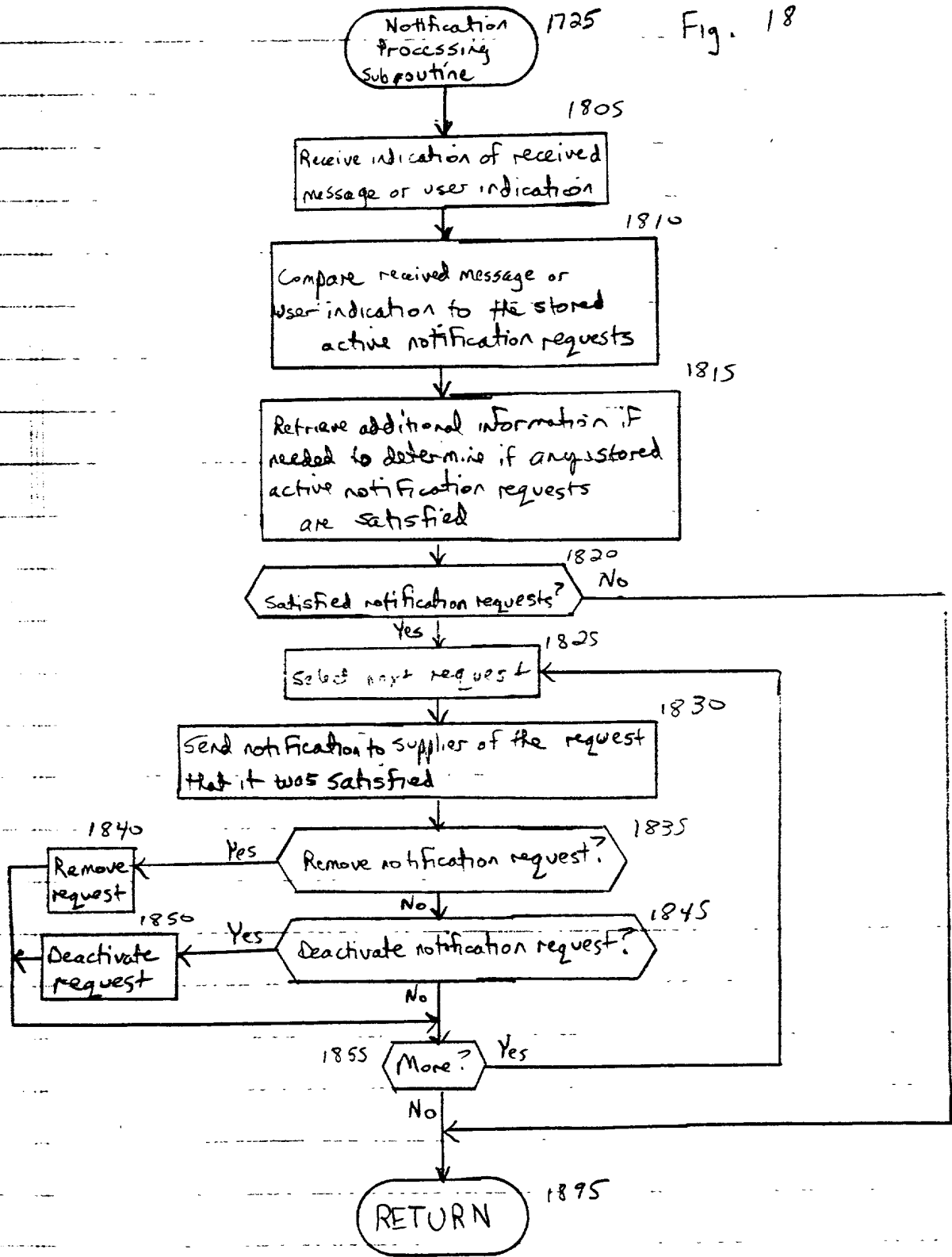
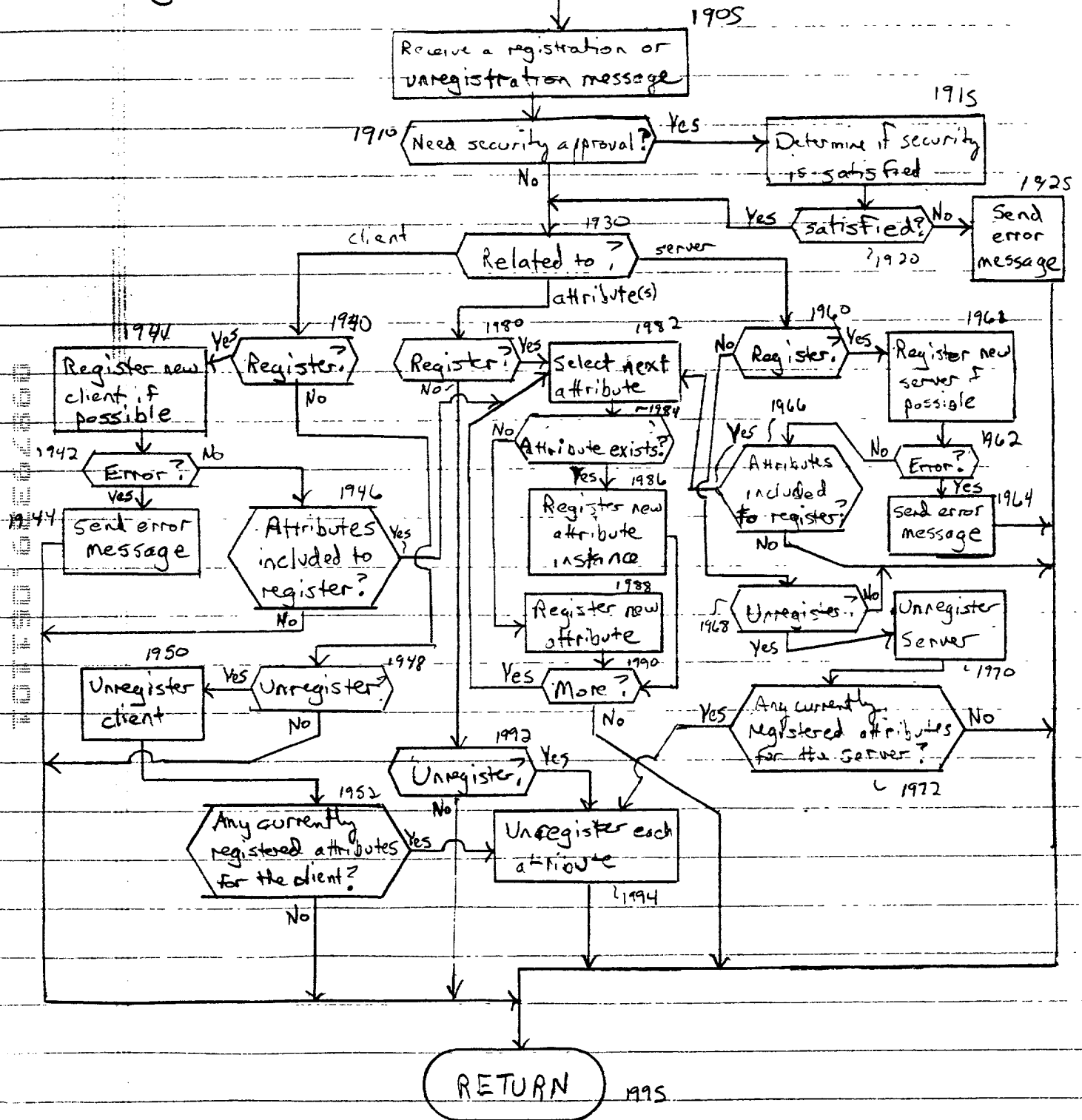


Fig. 19

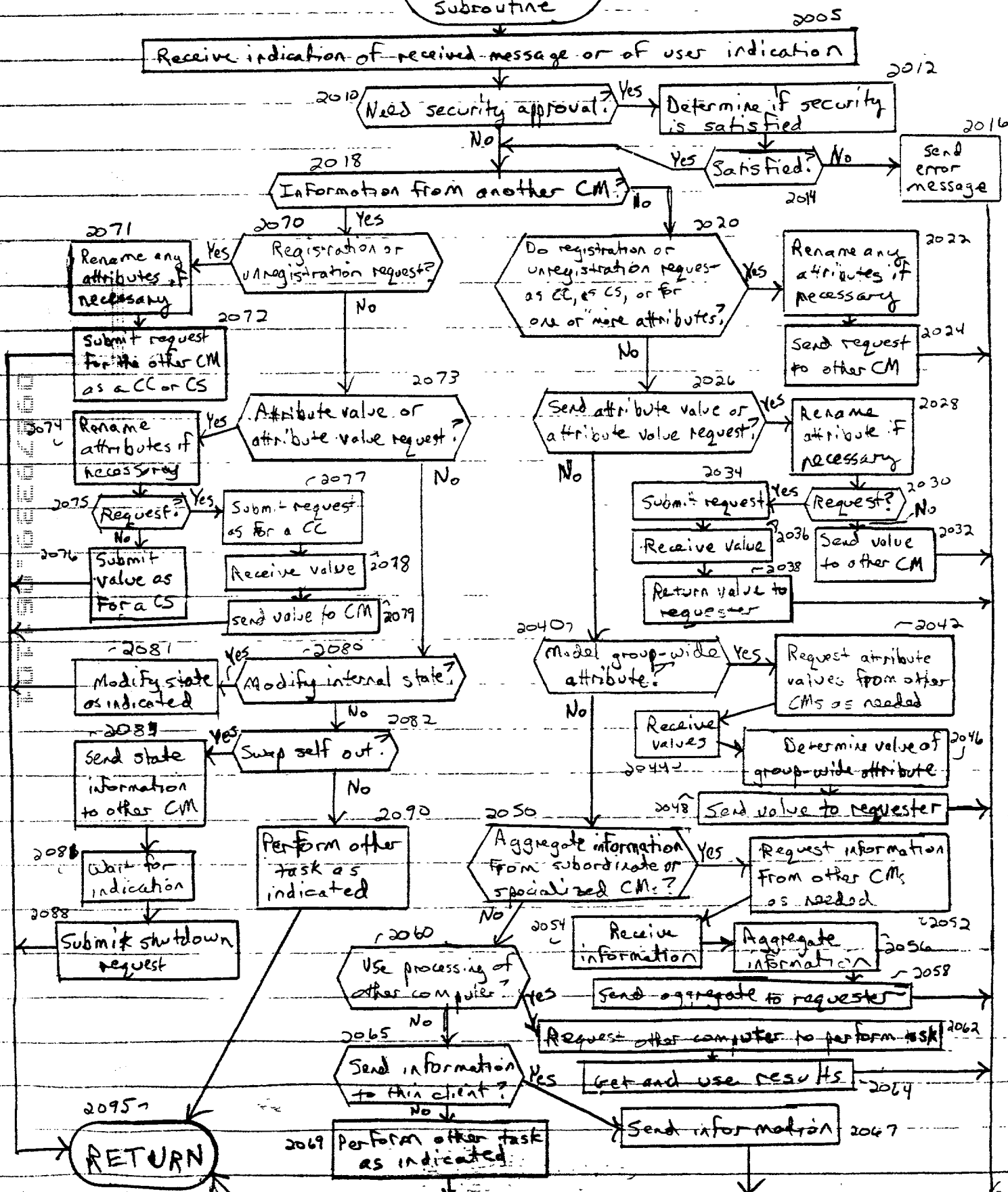
Dynamically Specify Available
Clients, Servers, & Attributes
Subroutine 1735



Process Distributed CM Message Subroutine

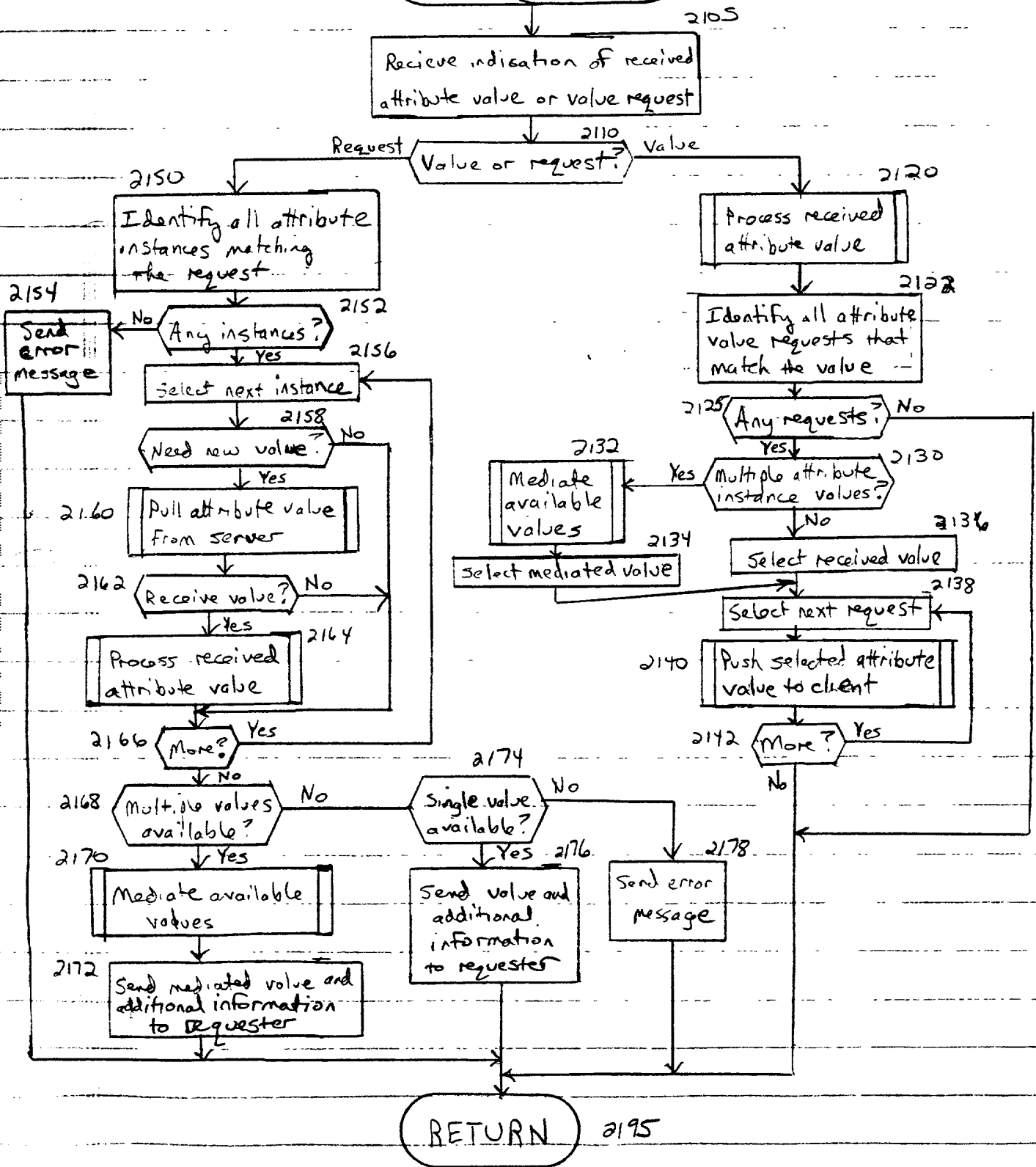
1765

Fig. 20



1745
Process Attribute Value
Or Value Request Message
Subroutine

Fig. 21



2200 Fig 22

Process Received Attribute Value Subroutine

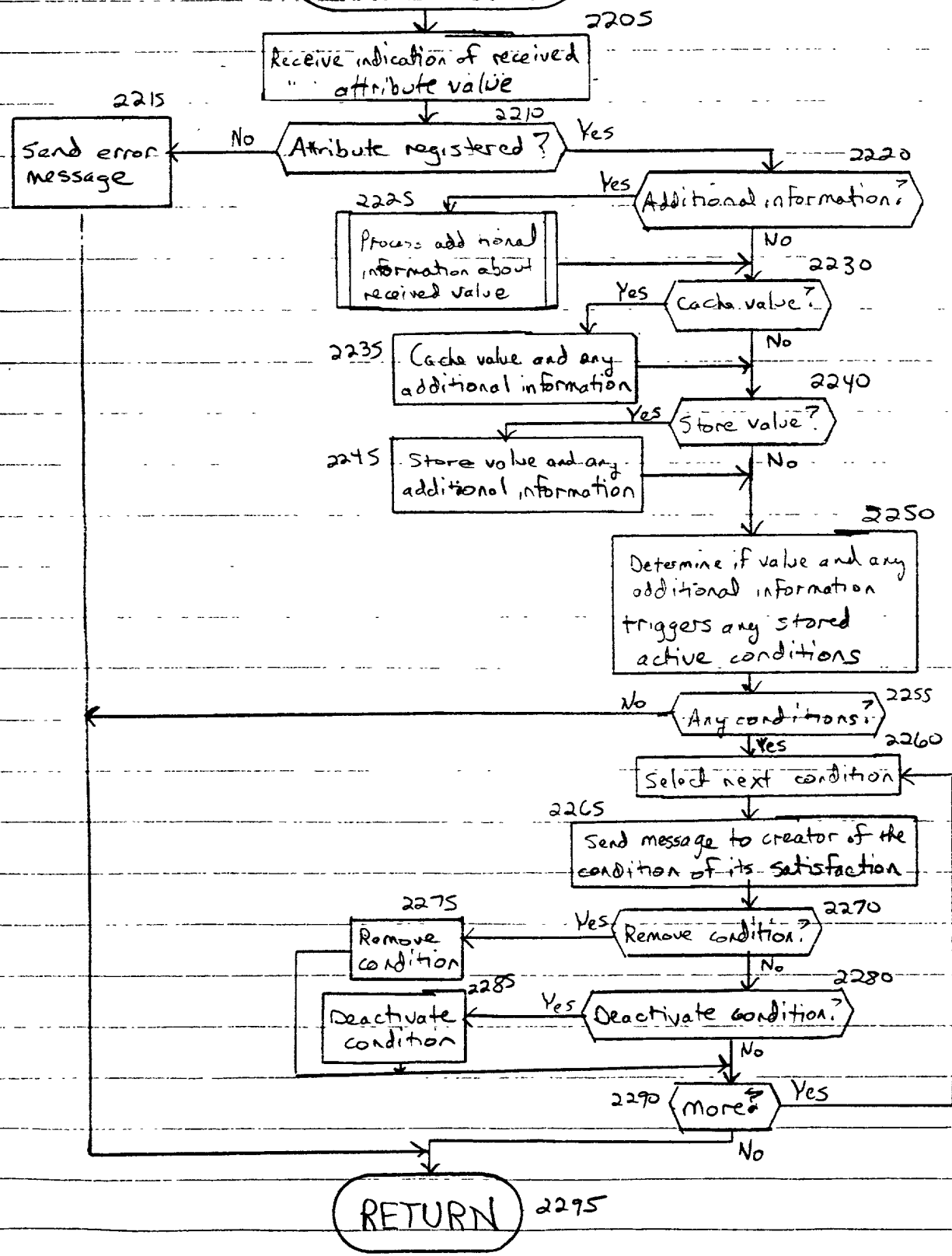
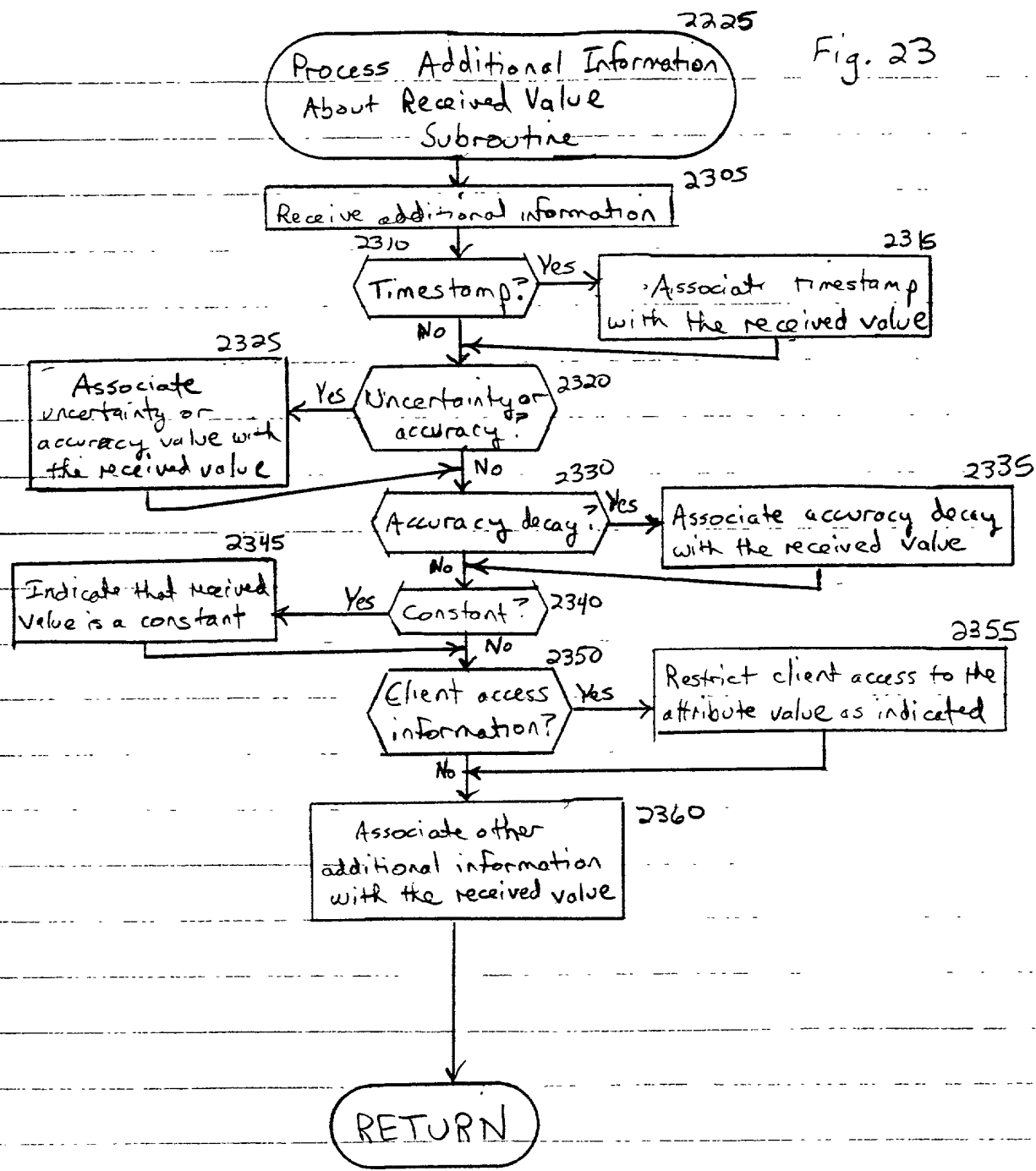


Fig. 23



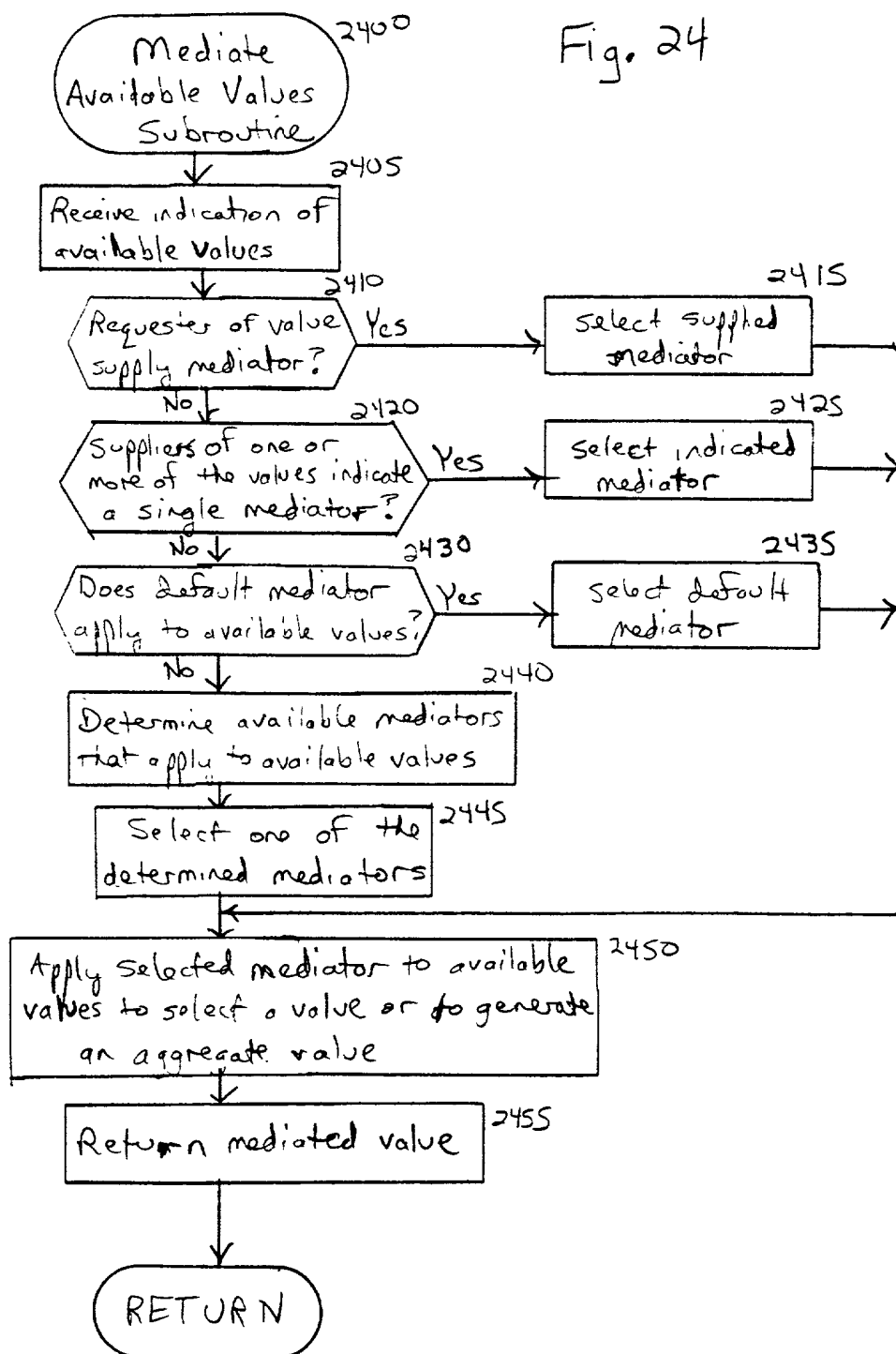
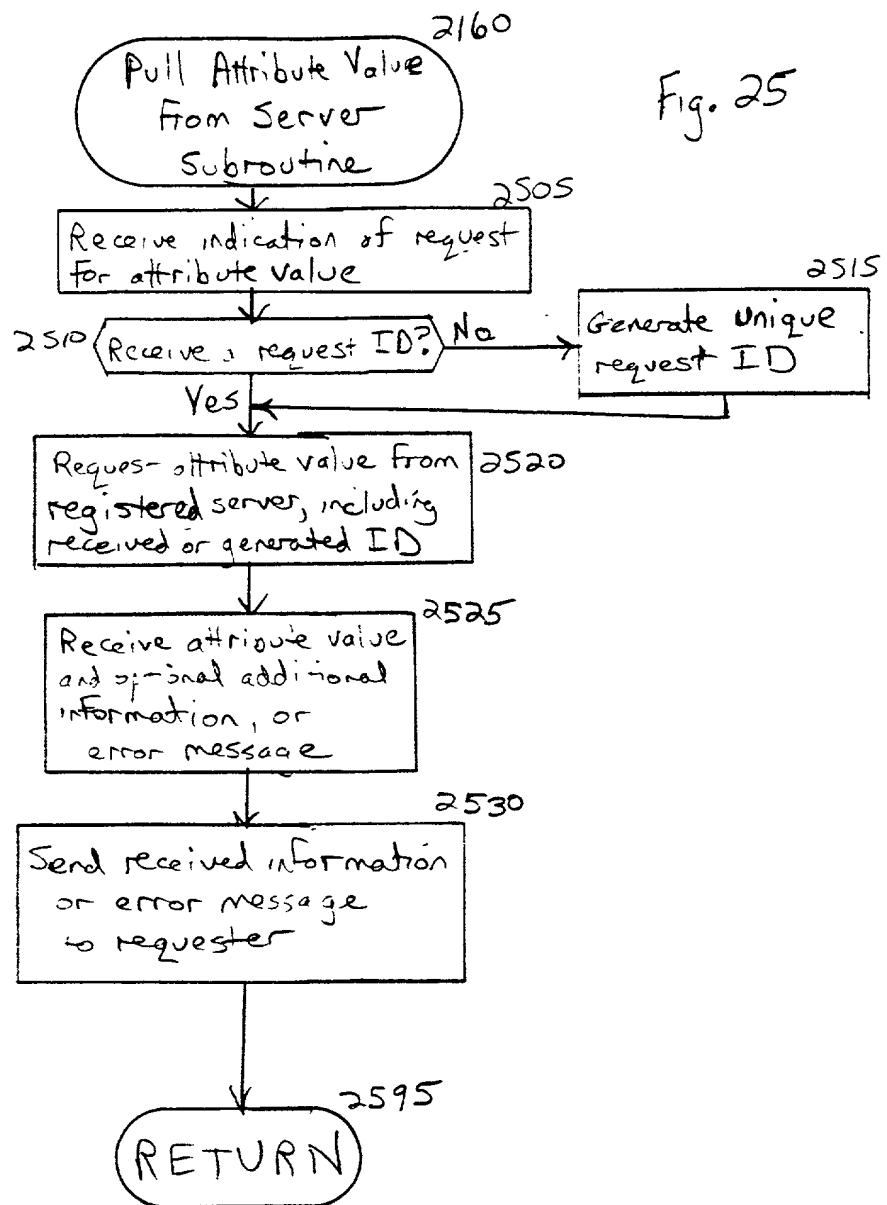
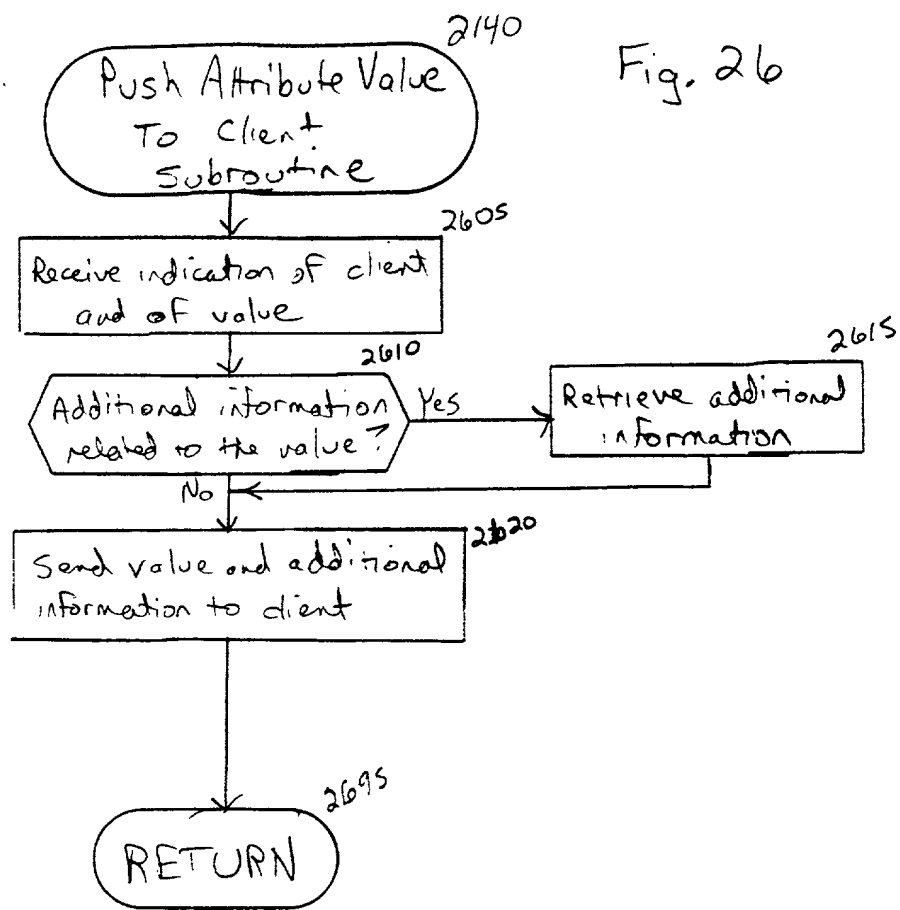


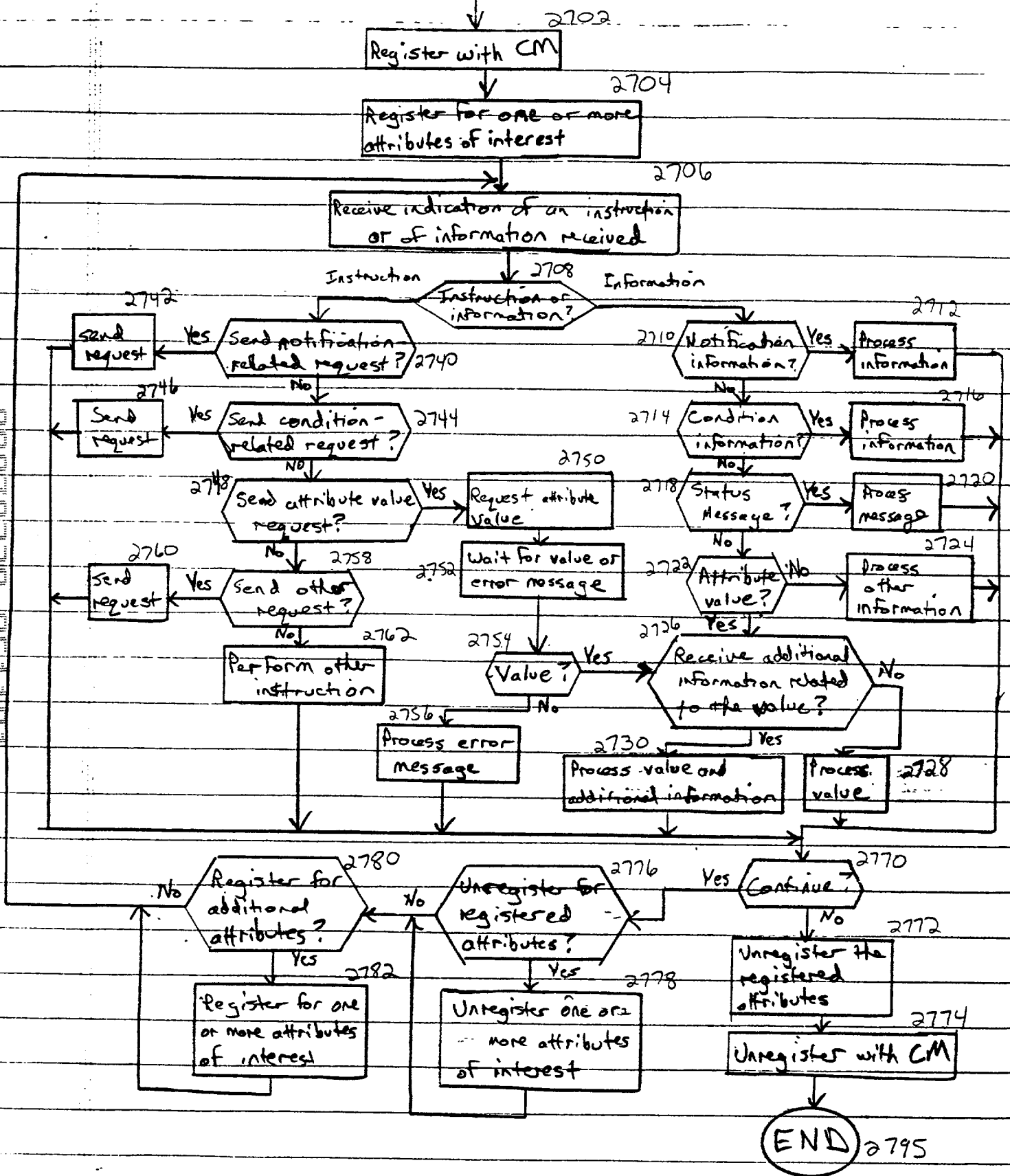
Fig. 25





Context Client Routine 2700

Fig. 27



Context Server Routine 2800

Fig. 28

